

WASTE SECTOR: LANDFILL GAS FOR ENERGY

◆ RHODE ISLAND

Using Landfill Gas to Produce Electricity

Rhode Island's landfill gas (LFG) to electricity project not only creates electricity from waste gases, it also helps control odor from Rhode Island's Central Landfill. The Rhode Island Solid Waste Management Corporation (RISWMC) is a state chartered entity responsible for the management of the Central Landfill in Johnston, Rhode Island. The LFG to electricity project began in 1987, when RISWMC had a private company investigate landfill odors and the possibility of collecting landfill gas to generate electricity. As a result of that investigation, a landfill gas odor control facility was installed, consisting of two 1,300 standard cubic feet per minute (scfm) gas flares. In addition to controlling the odor, RISWMC saw the potential for a LFG to electricity project and worked with a number of private companies to pursue recovery of the gas and the construction of a landfill gas power plant. Currently, the Ridgewood Power Management Corporation owns the landfill gas power plant and its operations, and it pays royalties to RISWMC for the rights to use the gas.



Results:

Each year since 1990, the Rhode Island Landfill Gas to Electricity project has been able to reduce landfill gas emissions, eliminate landfill gas odors, and receive payment for selling the right to use the landfill gas. Combusting the methane reduces annual GHG emissions by about 155,000 MTCE. In addition, the electricity generated at the project reduces the

amount of fossil fuels burned by electric utilities, avoiding CO₂ emissions by about 28,000 MTCE per year.* The electric utility offsets also account for annual reductions of approximately 735 MT of NO_x and 1,530 MT of SO₂ emissions.** The RISWMC has eliminated the landfill gas odor problem and also receives \$600,000 per year in royalties for the use of the gas. The early action on the part of RISWMC also allowed the landfill to cost-effectively control emissions well before USEPA promulgated the Landfill Gas Rule in 1996.

Landfill Energy Production	Cost Benefits	Greenhouse Gas Reductions
1,416,000 mmBTU/yr	\$600,000/yr (royalties to landfill)	183,000 MTCE*/yr

Principal Actors:

The Rhode Island Landfill Gas to Electricity Project was initiated by the Rhode Island Solid Waste Management Corporation, which looked into the use of landfill gas for electricity after complaints about odors from the landfill. RISWMC has no risk on the project and receives payment for the use of the gas. The program is administered by Dufresne and Henry Incorporated; the Ridgewood Power Management Corporation owns the landfill gas power plant and operations.

Additional Information:

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This case study is based on information provided by John Murphy, Dufresne-Henry Incorporated.

* Original data have been converted from standard cubic feet per minute (scfm) of landfill gas to estimates of CH₄ and CO₂, expressed in units of Metric Tons of Carbon Equivalent (MTCE).

** The following conversion factors were applied to the original data: 1.77 MT NO_x / GWh and 3.69 MT SO₂ / GWh, MT = metric tons.